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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/694,345	10/24/2000	Akihiko Mizutani	PM 274421 54586-US-HH	9167

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06/03/2003

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EXAMINER

WILLIAMS, JOSEPH L

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/694,345

Applicant(s)

MIZUTANI, AKIHIKO

Examiner

Joseph L. Williams

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 4 is objected to because of the following informalities: Claims are to begin with a capital letter. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al. (US 5,811,915), of record by Applicant as GB 2306196A.

Regarding claim 1, Abe ('915) teaches in figures 2 and 3, and in column 5, line 28 through column 8, line 6, a method of manufacturing a spark plug for internal combustion engine having a center electrode (3), a housing (1) surrounding and holding the center electrode so as to expose a leading end of the center electrode out of an end of the housing and a ground electrode (4) whose one leading end is fixed to the end of

Art Unit: 2879

the housing and whose another leading end faces the leading end of the center electrode to constitute a spark discharge gap therebetween, and a noble metal chip (5) bonded to the leading end of at least one of the center and ground electrodes, comprising steps of:

putting the noble metal chip on the leading end of the one of the center and ground electrodes so that a surface of the noble metal chip may come in contact with a surface of the leading end of the one of the center and ground electrodes (figure 3A);

executing resistance welding provisionally in such a manner that current is passed through the noble metal chip and the leading end of the one of the center and ground electrodes, while the noble metal chip is pressed toward the leading end of the one of the center and ground electrodes, so as to fix the noble metal chip to the one of the center and ground electrodes in a state that a part of the noble metal chip is embedded into the one of the center and ground electrodes (figure 3A and column 5, line 37 through column 6, line 5); and

executing laser welding (figure 3B) finally so as to melt a circumference of a portion where the noble metal chip is embedded into the one of the center and ground electrodes, wherein at least one of a current supply amount and a current supply time period by the provisional resistance welding is controlled according to at least one of a transit embedding length and a transit embedding speed of the noble metal chip to the one of the center and ground electrodes to establish a predetermined final embedding amount of the noble metal chip to the one of the center and ground electrodes (constant current ($I = 800 \text{ A}$) and constant pressure ($(\text{pressure} = 25 \text{ kg/cm}^2)$ (embedding speed))

Art Unit: 2879

are applied to achieve a embedding depth of 0.3 mm or less (see column 7, line 44, the height of the 0.4 mm chip exposed is 0.1 mm or greater)).

Regarding claim 3, Abe ('915) teaches the predetermined final embedding amount of the noble metal chip to the one of the center and ground electrodes is not larger than 0.1 mm (see column 7, line 44, the height of the 0.4 mm chip exposed is 0.1 mm or greater).

Regarding claim 4, Abe ('915) teaches in column 8, lines 1-6, the noble metal chip being made of Ir-Pt.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US 5,811,915), of record, in view of (Toya et al. (US 4,743,793).

Regarding claim 2, Abe ('915) teaches all of the above limitations except for the resistance welding equipment having a first electrode electrically conductive to the noble metal chip and a second electrode electrically conductive to the center or ground electrode.

Toya ('793) teaches in figure 17 and in column 9, line 17 through column 10, line 26 a resistance welding process, which includes, in part, a first electrode (39) electrically conductive to the noble metal chip (37) and a second electrode (39) electrically conductive to the ground electrode (7) for the purpose of improving the durability of the spark plug.

Hence it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the two electrodes of Toya in place of the single electrode of Abe in the resistance welding for the purpose of improving the durability of the spark plug.

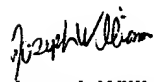
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph L. Williams whose telephone number is (703) 305-1670. The examiner can normally be reached on M-F (6:30 AM-3:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Art Unit: 2879

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Joseph Williams

Examiner

Art Unit 2879

May 27, 2003